The paper is a bold attempt to use very few channels radar data to retrieve/update the last number of snow profile parameters from the Crocus model. It is unclear that the data assimilation method works.

The following comments should be addressed.

1. Equation (5) is a gross approximation. It depends on k_0^3 and L^3. The dependence is basically Rayleigh scattering. Experimental data of κ_s (equation 8) shows that such dependence are too strong. Recent models have much agreement with measurements.
2. The SFT model has very small cross polarization
3. Figure 6 has data of snow depth up to 700 cm. A single scattering approach is inadequate.
4. Only 1 channel HH and dozens of parameters from Crocus. The choice of R and $B$are crucial. Such choices should be discussed in details
5. The better match only means updating the profile match the radar data better. It does not mean the retrieved/updated profile is the true profile in view of the large number of parameters in the Crocus.